

Claims

1. A memory device comprising a layer of piezoelectric material and a layer of ferroelectric material clamped together such that a voltage applied to one layer results in a voltage being generated across the other layer.

2. A memory device as claimed in claim 1, wherein the piezoelectric material is a ferroelectric material.

3. A ~~memory device as claimed in claim 1 or claim 2, wherein a common electrode is provided between the two layers, an input electrode is provided on one of the layers and an output electrode is provided on the other of the layers, the input and output electrodes being disposed on opposite sides of their respective layers compared with the common electrode.~~

4. A memory device as claimed in claim 3, further comprising a comparator having respective inputs connected to the input and output electrodes.

5. A ~~memory device comprising a plurality of devices as claimed in any preceding claim.~~

6. A memory device as claimed in claim 5, wherein the respective input electrodes are arranged parallel to each other in a spaced apart manner in a first plane, the respective common electrodes are arranged parallel to each other in a spaced apart manner in a second plane and the respective output electrodes are arranged parallel to each other in a spaced apart manner in a third plane, with the said planes being parallel to each other, the input and output electrodes being parallel with each other and the common electrodes being perpendicular thereto.

7. A method of data storage and retrieval comprising the steps of: providing a layer of ferroelectric material, providing a layer of piezoelectric material, clamping the two layers together, storing data by internally polarising the ferroelectric material in one of two stable directions in accordance with the data to be stored, and retrieving stored data by applying a non-polarising voltage to one layer and detecting a resultant voltage from the other layer.

8. — A method as claimed in claim 7, wherein the step of providing a layer of piezoelectric material comprises the step of providing a ferroelectric material as that piezoelectric material.

9. A method as claimed in claim 8, comprising the steps of: internally polarising the piezoelectric layer implemented by a ferroelectric material in a reference direction, arranging for the storage of data by internally polarisation in the said one of two directions relative to the reference direction.

10. A method as claimed in any of claims 7 to 9, wherein the step of detecting the said resultant voltage comprises comparing the phase of the said resultant voltage with the phase of the said applied non-polarising voltage.

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